GASES - Overview

- 4 Gas Parameter: V, T, n, P
- Theory: a) Kinetic Theory of Gas (part of kinetic Molecular Theory)
  b) Ideal gas condition
  (there is also a Real Gas condition)

You do something to Gas
2 condition
(1 - initial, 2 - final)

You DO NOT do anything to Gas
1 condition

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2 constant, 2 varying

1) Boyle's Law P vs. V @ const T & n
2) Charles' Law T vs. V @ const P & n
3) Guy-Lussac's Law P vs. T @ const n & V
(I call it No Name Law)
4) Avogadro's Hypothesis n vs. V @ const P & T

1 constant, 3 varying

5) Combined Gas Law @ const n, P, V, T varies

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1) Ideal Gas Law

$$PV = nRT$$

R - Ideal Gas constant
$= 0.0821 \frac{L \cdot atm}{mol \cdot K}$

2) Mixture of Gases
Dalton's Law of Partial Pressure

$$P_{total} = \sum P_i$$

P_i - Partial pressure of Gas i

$$P_i \cdot V_T = n_i R T$$

3) Gas Density

$$D_{Gas} = \frac{P}{RT} \cdot MW$$

MW - molar mass of gas

4) Effusion / Diffusion

$$\frac{r_A}{r_B} = \sqrt{\frac{MW_B}{MW_A}}$$

r_A - rate of Gas A
r_B - rate of Gas B

5) Gas generation calculation
- stoichiometry → gas Law
- Gas Law → stoichiometry

: Gas collected above Liquid or not.